



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/504,782	02/15/2000	Masahiro Kume	0819-337	8307
22204	7590	11/03/2004	EXAMINER FLORES RUIZ, DELMA R	
NIXON PEABODY, LLP 401 9TH STREET, NW SUITE 900 WASHINGTON, DC 20004-2128			ART UNIT 2828	PAPER NUMBER

DATE MAILED: 11/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/504,782

Applicant(s)

KUME ET AL.

Examiner

Delma R. Flores Ruiz

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 August 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

1-30

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) 7-30 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 4-6 is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 – 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sverdlov (6,455,337) in view of Jung, W G et al. (KR 2002000898 A).

Regarding claims 1 – 3, Sverdlov discloses a semiconductor laser device comprising; a first cladding (see Fig. 1, Character 16) layer, which is made of a nitride semiconductor of a first conductivity type (see Fig. 1, Character 18) and is formed over

a substrate (see Fig. 1, Character 12); an active layer (see Fig. 1, Character 20), which is made of, which is made $\text{In}_y\text{Ga}_{1-y}\text{N}$ layer and is formed over the first cladding layer; and a second cladding (see Fig. 1, Character 24) layer, which is made of still another nitride semiconductor of a second conductivity type (see Fig. 1, Character 22) and is formed over the active layer (see Figs. 1 – 7, Abstract, Column 2, lines 43 – 67, Column 4, lines 11 – 65). The $\text{In}_x\text{Ga}_{1-x}\text{N}$ layer and is formed is formed in contact with the first cladding layer and substrate (see Figs. 1 – 7, Abstract, Column 2, lines 43 – 67, Column 4, lines 11 – 65). Jung W G teaches providing his device with a wherein $\text{In}_x\text{Ga}_{1-x}\text{N}$ layer of the first conductivity type is formed between the substrate and the first cladding layer and $x \geq y$ in the composition on In with semiconductor device for the purpose of conductive a specific area and provided to easily grow an indium-containing compound layer like an $\text{In}_x\text{Al}_y\text{Ga}_{1-x-y}\text{N}$ layer, by growing $\text{In}_x\text{Ga}_{1-x}\text{N}$ as a buffer layer so that mole density of indium is easily increased or decreased. It would have been obvious at the time of applicant's invention, to combine Jung W G of teaching a $\text{In}_x\text{Ga}_{1-x}\text{N}$ layer of the first conductivity type is formed between the substrate and the first cladding layer and $x \geq y$ in the composition on In with semiconductor device because It would have been obvious to one having ordinary skill in the art at the time the invention was made to $\text{In}_x\text{Ga}_{1-x}\text{N}$ layer of the first conductivity type is formed between the substrate and the first cladding layer and $x \geq y$ in the composition on In, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

Allowable Subject Matter

The following is an examiner's statement of reasons for allowance: claim 4 has been allowed over the prior art because they fail to teach a semiconductor laser device comprising; a first cladding layer, which is made of a nitride semiconductor of a first conductivity type and is formed over substrate; an active layer, which is made of $\text{In}_y\text{Ga}_{1-y}\text{N}$ and is formed over the first cladding layer; a second cladding layer, which is made of still another nitride semiconductor of a second conductivity type and is formed over the active; an electrode formed over the second cladding layer, ***and an $\text{In}_x\text{Ga}_{1-x}\text{N}$ of the first conductivity type is formed between the second cladding layer and electrode, wherein $0 < x < 1$, $0 < y < 1$ and $x > y$ in the composition of In.***

Claims 5 – 6 has been found allowable due to their dependency on claim 4.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reason for Allowance".

Response to Arguments

Applicant's arguments filed 08/12/2004 have been fully considered but they are not persuasive. The amendment filed on 7/12/2002 canceling all claims drawn to the elected invention and presenting only claims drawn to a non-elected invention is non-responsive (MPEP § 821.03). The remaining claims are not readable on the elected invention because have a different embodiments.

Since the above-mentioned amendment appears to be a *bona fide* attempt to reply, applicant is given a TIME PERIOD of ONE (1) MONTH or THIRTY (30) DAYS, whichever is longer, from the mailing date of this notice within which to supply the omission or correction in order to avoid abandonment. EXTENSIONS OF THIS TIME PERIOD UNDER 37 CFR 1.136(a) ARE AVAILABLE.

Applicant argues the prior art lacks: In claims 1 – 3, the Applicant's Amendment does not state or assert that Sverdlov '337 does not teach this " $0 < x < 1$, $0 < y < 1$ " feature. Accordingly, since the new ground of rejection relying upon thee Jung et al. The examiner disagree with the applicant arguments since the prior art does teach Sverdlov (6,455,337) in view of Jung, W G et al. (KR 2002000898 A) (see Fig. 1 in Jung, W G et al. (KR 2002000898 A)) as stated in the rejection above.

Applicant argues the prior art lacks: As discussed at length in the Amendment of October 31, 2003, the Sverdlov '337 patent does not teach or suggest the presence of an $\text{In}_x\text{Ga}_{1-x}\text{N}$ layer between the n^+ GaN cladding layer 16 and the substrate 12, but the patentees instead disclose the presence of a buffer GaN layer between the n^+ GaN cladding layer 16 and the substrate 12. Further, the Sverdlov reference does not teach or suggest the $x > y$ relationship of the content of "In" in the buffer layer or active layer as presently claimed (or as claimed in the earlier Amendment of October 31, 2003). Additionally, a review of the Jung et al reference cited by the Examiner does not reveal any explicit teaching of a relationship i.e. " $x > y$ ", between the "In" content of the $\text{In}_x\text{Ga}_{1-x}\text{N}$ buffer layer 12 and the active layer 15 (which is also of the formula $\text{In}_x\text{Ga}_{1-x}\text{N}$) as presently claimed. It is further noted that layers 13 and 14 of Jung et al are composed of $\text{In}_x\text{Al}_y\text{Ga}_{1-x-y}\text{N}$ and are not active layer. Further, the claimed relationship of "In" in the buffer layer to the "In" in active layer, i.e., " $x > y$ " does not appear to be implicitly suggested by any of the teachings of Jung et al. Therefore, the teachings of Jung et al. do not remedy the teaching of Sverdlov such that each and every feature of the present claim 1 is taught or suggested by the reference. The examiner disagrees with the applicant arguments since the prior art does teach of a relationship i.e. " $x > y$ ", between the "In" content of the $\text{In}_x\text{Ga}_{1-x}\text{N}$ buffer layer 12 (as presently claimed (see Fig. 1 in Jung, W G et al. (KR 2002000898 A)) and the active layer 15 (which is also of the formula $\text{In}_x\text{Ga}_{1-x}\text{N}$) as presently claimed (active layer (Sverdlov '337, see Figs. 1 – 7, Abstract, Column 2, lines 43 – 67, Column 4, lines 11 – 65 and In response to applicant's

argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the active layer 15 (which is also of the formula $\text{In}_x\text{Ga}_{1-x}\text{N}$)) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993)) as stated in the rejection above.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case,

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Delma R. Flores Ruiz whose telephone number is (571) 272-1940. The examiner can normally be reached on M - F.

Art Unit: 2828

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Min Sun Harvey can be reached on (571) -272-1835. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Delma R. Flores Ruiz
Examiner
Art Unit 2828



Min Sun Harvey
Supervisor Patent Examiner
Art Unit 2828

DRFR/MH'
October 31, 2004